In the Claims:

1. (Original) A fuel dispensing system that receives fuel pumped by a submersible turbine pump from an underground storage tank to dispense to a vehicle, comprising:

a fuel dispenser, comprising:

a housing;

a hose;

a nozzle coupled to said hose;

a double-walled fuel supply piping having an inner piping and an outer piping located around said inner piping forming an interstitial space between said inner piping and said outer piping, wherein said double-walled fuel supply piping is fluidly coupled to said submersible turbine pump and is located internal to said housing and carries the fuel to said hose for dispensing; and

a pressure sensor coupled to said interstitial space to detect a vacuum level in said interstitial space;

a vacuum generator coupled to said interstitial space; and

a controller that is coupled to said vacuum generator to cause said vacuum generator to generate a vacuum in said interstitial space wherein said controller is coupled to said pressure sensor to determine the vacuum level in said interstitial space.

2. (Currently Amended) The system of claim 1, wherein said controller generates a catastrophic leak detection alarm if said vacuum generator cannot create a ~~said~~ defined initial threshold vacuum level in said interstitial space.

3. (Currently Amended) The system of claim 1, wherein said controller determines if the vacuum level in said interstitial space has decayed to a catastrophic threshold vacuum level from a ~~said~~ defined initial threshold vacuum level.

4. (Original) The system of claim 3, wherein said controller activates said vacuum generator to attempt to lower the vacuum level in said interstitial space back down to said defined initial threshold vacuum level if the vacuum level in said interstitial space decays to said catastrophic threshold vacuum level.

5. (Original) The system of claim 4, wherein said controller determines if the vacuum level in said interstitial space lowers to said defined initial threshold vacuum level within a defined amount of time.

6. (Original) The system of claim 5, wherein said controller generates a catastrophic leak detection alarm if said controller determines that the vacuum level in said interstitial space does not lower to said defined initial threshold vacuum level within said defined amount of time.

7. (Currently Amended) The system of claim 1, wherein said controller determines if a leak exists in said double-walled fuel supply piping by determining if the vacuum level in said interstitial space decays to a threshold vacuum level in a predetermined amount of time.

8. (Original) The system of claim 7, wherein said threshold vacuum level is a precision threshold vacuum level.

9. (Original) The system of claim 1, further comprising a liquid detection sensor that is coupled to said interstitial space, wherein said liquid detection sensor is coupled to said controller and wherein said liquid detection sensor detects if liquid is present in said interstitial space.

10. (Currently Amended) The system of claim 9, wherein said controller generates a leak detection alarm when ~~said~~ liquid detection is communicated from said liquid detection sensor.

11. (Original) The system of claim 9, wherein said controller disables said vacuum generator when said liquid detection is communicated from said liquid detection sensor.

12. (Original) The system of claim 9, wherein said liquid detection sensor comprises a float.

13. (Original) The system of claim 1, further comprising vacuum tubing that couples said vacuum generator to said interstitial space.

14. (Original) The system of claim 13, further comprising a vacuum control valve that is coupled inline to said vacuum tubing between said vacuum generator and said interstitial space wherein said vacuum control valve is electrically coupled to and under control of said controller.

15. (Currently Amended) The system of claim 14, wherein said controller closes said vacuum control valve before monitoring the vacuum level in said interstitial space to determine if a leak exists in said double-walled fuel supply piping so that said vacuum generator is isolated from said interstitial space.

16. (Currently Amended) The system of claim [[1]] 13, wherein said vacuum tubing is connected to said interstitial space through a fitting.

17. (Currently Amended) The system of claim 13, wherein said vacuum tubing is connected to said interstitial space through said outer piping ~~wall~~.

18. (Currently Amended) The system of claim 1, wherein said controller detects a leak in said double-walled fuel supply piping if the vacuum level in said interstitial space changes after said vacuum generator creates a vacuum in said interstitial space.

19. (Currently Amended) The system of claim 18, further comprising a fuel flow control valve coupled to said double-walled fuel supply piping downstream from said pressure sensor wherein said controller directs said fuel flow control valve to close if said controller detects a leak.

20. (Currently Amended) The system of claim 18, further comprising a shear valve coupled to said double-walled fuel supply piping upstream wherein said controller directs said shear valve to close if said controller detects a leak.

21. (Currently Amended) The system of claim 1, further comprising a shear valve having an inlet side and an outlet side wherein said outlet side is coupled to said double-walled fuel supply

piping and said inlet side is coupled to a main fuel supply conduit having an interstitial space that delivers fuel from said submersible turbine pump to said double-walled fuel supply piping wherein said interstitial space of said main fuel supply conduit is coupled to said interstitial space of said double-walled fuel supply piping.

22. (Currently Amended) The system of claim 21, wherein said vacuum generator is [[a]] said submersible turbine pump that generates a vacuum through said interstitial space of said double-walled fuel supply piping via said vacuum generated in said interstitial space of said main fuel supply conduit by said submersible turbine pump.

23. (Currently Amended) The system of claim 21, wherein said shear valve includes an interstitial space that is coupled to said interstitial space of said double-walled fuel supply piping and said interstitial space of said main fuel supply conduit.

24. (Original) The system of claim 1, wherein said vacuum generator is said submersible turbine pump.

25. (Currently Amended) A method for detecting a leak in a double-walled fuel supply piping internal to a fuel dispenser having an interstitial space, comprising:

creating a vacuum level in [[an]] the interstitial space of [[a]] the double-walled fuel supply piping internal to the fuel dispenser using a vacuum generator;

sensing the vacuum level in the interstitial space using a pressure sensor; and

monitoring the vacuum level in said interstitial space to determine if a leak exists in the double-walled fuel supply piping.

26. (Original) The method of claim 25, further comprising coupling said vacuum generator to said interstitial space using vacuum tubing.

27. (Currently Amended) The method of claim 26, wherein said step of coupling vacuum generator to the interstitial space using vacuum tubing comprises coupling the vacuum tubing to said interstitial space through an outer wall of said double-walled fuel supply piping.

28. (Currently Amended) The method of claim 26, wherein said step of coupling vacuum generator to said interstitial space using vacuum tubing comprises coupling said vacuum tubing to said interstitial space through a fitting associated with said double-walled fuel supply piping.

29. (Currently Amended) The method of claim 25 wherein the step of sensing the vacuum level in said interstitial space using a pressure sensor comprises sensing the vacuum level with [[a]] said pressure sensor positioned in said interstitial space.

30. (Currently Amended) The method of claim 25, further comprising the step of sensing whether liquid ~~fluid~~ is present in the interstitial space using a liquid detection sensor.

31. (Original) The method of claim 30, further comprising generating a liquid leak detection alarm if said liquid detection sensor senses liquid in said interstitial space.

32. (Original) The method of claim 30, further comprising disabling said vacuum generator if said liquid detection sensor senses liquid in said interstitial space.

33. (Original) The method of claim 25, further comprising closing a vacuum control valve to isolate said vacuum generator from said interstitial space before performing said step of monitoring the vacuum level in said interstitial space.

34. (Original) The method of claim 33, further comprising verifying a leak in said interstitial space by closing said vacuum control valve that isolates said interstitial space from said vacuum generator.

35. (Original) The method of claim 25, further comprising preventing ingress from said interstitial space to said vacuum generator.

36. (Original) The method of claim 25, further comprising determining if said vacuum generator is drawing a sufficient vacuum level in said interstitial space.

37. (Currently Amended) The method of claim 36, further comprising generating an alarm if said vacuum generator is not drawing [[a]] said sufficient vacuum level in said interstitial space.

38. (Original) The method of claim 25, further comprising generating a catastrophic leak detection alarm if said vacuum generator cannot create a defined initial threshold vacuum level in said interstitial space.

39. (Original) The method of claim 38, further comprising determining if the vacuum level in said interstitial space has decayed to a catastrophic threshold vacuum level from said defined initial threshold vacuum level.

40. (Original) The method of claim 39, further comprising activating said vacuum generator to attempt to lower the vacuum level in said interstitial space back down to said defined initial threshold vacuum level if the vacuum level in said interstitial space decays to said catastrophic threshold vacuum level.

41. (Original) The method of claim 40, further comprising determining if the vacuum level in said interstitial space lowers to said defined initial threshold vacuum level within a defined amount of time.

42. (Original) The method of claim 41, further comprising generating a catastrophic leak detection alarm if the vacuum level in said interstitial space does not lower to said defined initial threshold vacuum level within said defined amount of time.

43. (Currently Amended) The method of claim 25, further comprising determining if a leak exists in said double-walled fuel supply piping by determining if the vacuum level in said interstitial space decays to a threshold vacuum level in a predetermined amount of time.

44. (Currently Amended) The method of claim [[44]] 43, wherein said threshold vacuum level is a precision threshold vacuum level.

45. (Currently Amended) The method of claim 25, further comprising detecting a leak in said double-walled fuel supply piping if the vacuum level in said interstitial space changes after said vacuum generator creates a vacuum in said interstitial space.

46. (Currently Amended) The method of claim 26, further comprising closing a fuel flow control valve in said vacuum tubing if a leak is detected in said double-walled fuel supply piping.

47. (Currently Amended) The method of claim 25, further comprising closing a shear valve coupled to said double-walled fuel supply piping if a leak is detected in said double-walled fuel supply piping.

48. (Currently Amended) The method of claim 25, wherein said step of creating a vacuum level in [[an]] the interstitial space of [[a]] the double-walled fuel supply piping internal to the fuel dispenser is performed using a submersible turbine pump.